RECEIVED
CENTRAL FAX CENTER
DEC 0 1 2008

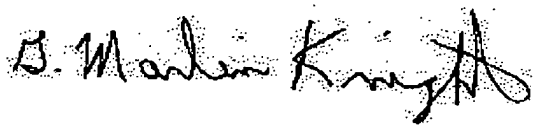
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Transmittal for Appeal Brief	Application Number: 10/814933 Filing Date: Mar. 30, 2004 First Named Inventor: Buchan Group Art Unit: 1795 Examiner: C. P. Johnson Atty. Docket Num. HSJ920040023US1

Commissioner for Patents
By Fax to 571-273-8300

A fee of $540.00 is due with this response. The Commissioner is hereby authorized to charge payment fees associated with this communication (including any required under 37 CFR 1.17), or credit any overpayment to **Deposit Account 50-2587**.

Attached hereto is a Brief (totaling 19 pages) in support of applicants' appeal to the Board of Patent Appeals and Interferences from the final rejection of applicants' claims by the Examiner in an Office Action dated July 2, 2008.



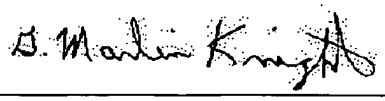
G. Marlin Knight (#33,409)
Attorney of Record
PO Box 1320
Pioneer, CA 95666
209-295-1982

Transmission by Fax CERTIFICATE

I hereby certify that the above paper is being transmitted to telephone no. 571-273-8300 on the date indicated below and is addressed to the Commissioner for Patents.

Date of Transmission: Dec. 1, 2008

Person sending paper: G. Marlin Knight



Signature: _____

12/02/2008 VBUI11 00000015 502587 10814933
01 FC:1402 540.00 DA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appeal Brief by Applicants	Application Number: 10/814933 Filing Date: Mar. 30, 2004 First Named Inventor: Buchan Group Art Unit: 1795 Examiner: C. P. Johnson Atty. Docket Num. HSJ920040023US1

Commissioner for Patents

1. Real Party in Interest:

As the assignee of all rights in the patent application, the following designates the Real Party in Interest:

HITACHI GLOBAL STORAGE TECHNOLOGIES NETHERLANDS B.V.
Locatellikade 1
Parnassustoren
1076 AZ Amsterdam
The Netherlands

2. Related Appeals and Interferences: None.

3. Status of Claims:

The claims in this appeal are claims 1-3, 11-12 and 14-23. Each of these claims has been finally rejected.

4. Status of Amendments:

All amendments have been entered.

5. Summary of the Claimed Subject Matter

Independent claim 1 is directed to structure 30 (Fig. 3) for applying photoresist 34 (Fig. 3) to a surface of a workpiece, i.e. the structure is a photoresist transfer pad loaded with a coating of photoresist. (p. 3, lines 6-9) The structure includes a transfer layer 31 of polydimethylsiloxane with a transferable coating of photoresist 34. (p. 4, lines 7-12). A cushion layer 32 consisting of rubber lies under the transfer layer and provides flexible support for the transfer layer 31. (p. 4, lines 12-15). The transferable coating of photoresist 34 is transferable to the workpiece through physical contact. (p. 5, lines 11-13, p. 5, lines 26-27). Thus, the resist transfer pad is used by pressing the surface with transferable coating of photoresist 34 against the workpiece and the resist transfer pad is removed from the workpiece before lithography processing. (p. 5, lines 24-25). In dependent claim 3 the cushion layer 32 consists of silicone rubber. (p. 4, 19-21).

Independent claim 15 also includes a cover-tape 37 (Fig. 4) attached to the cushion layer opposite to the layer of photoresist. The cover-tape 37 is larger in area than the cushion layer 32 and extends beyond two edges of the cushion layer 32. (p. 5, lines 18-25).

Independent claim 16 includes a stiffener layer 33 (Fig. 3) attached to the cushion layer 32, and a cover-tape 37 (Fig. 4) attached to the stiffener layer 33 opposite to the layer of photoresist 34. (p. 4, lines 28-31).

Independent claim 17 includes a cover-tape 37 (Fig. 4) and at least two photoresist transfer pads 38 attached to the cover-tape 37. The photoresist transfer pads comprise a polymer layer 31 with a transferable coating of photoresist 34 on an outer surface of the polymer layer, and a cushion layer 32 under the polymer layer. (p. 5, lines 16-22). In dependent claim 22, which depends from 17, the cover-tape and photoresist pads are formed into a roll. (p. 5, lines 13-23; Fig. 4). In dependent claim 23, which depends from 22, the cover-tape and photoresist pads are sequentially disposed on the cover-tape so that unrolling the roll sequentially exposes the photoresist pads. (p. 5, lines 13-23; Fig. 4).

6. Grounds of Rejection to be Reviewed on Appeal

A. Whether claims 1-3 and 12 were properly rejected under section 103(a) as being unpatentable over Lille, 6725526 in view of Davis, et al. 6821626.

B. Whether claims 11 and 14-16 were properly rejected under section 103(a) as being unpatentable over Lille, 6725526 in view of Davis, et al. 6821626 and further in view of Drake, et al. 6200882.

C. Whether claims 17-23 were properly rejected under section 103(a) as being unpatentable over Otsuka, et al. 2003/0197978 in view of Bietsch, et al. 2005/0191582.

7. Arguments

Issue A:

The Examiner rejected claims 1-3 and 12 under section 103(a) as being unpatentable over Lille, 6725526 in view of Davis, et al. 6821626. Applicants respectfully disagree. Applicants' independent claim 1 is to a "structure for applying photoresist to a surface of a workpiece." This preamble language is given substance in the elements of the claim which include a "transferable coating of photoresist being transferable to the workpiece through physical contact." Applicants first submit that none of the references cited are appropriate art because none of them teaches a structure for applying photoresist to a surface of a workpiece.

Lille's structure does not include a transferable coating of photoresist and is not supported by a cushion layer of rubber as applicants claim.

Applicants' claim 1 includes "a transfer layer of polydimethylsiloxane with a transferable coating of photoresist ... ; and a cushion layer consisting of rubber under the transfer layer ...." It is respectfully submitted that the Examiner has erroneously equated applicants' claimed transfer layer with Lille's PDMS mold layer. The only similarity is that each is made of polydimethylsiloxane (PDMS). The applicants' transfer layer has a transferable coating of photoresist and is supported by a cushion layer of rubber, both of which are absent in Lille. In the rejection the Examiner stated that Lille teaches a PDMS layer that is transferable and cited to Lille col. 5, lines 28-31:

> Excess material is removed and the transfer film 14 with the resin-polymer 16 is positioned on the silicon suspension arm 10 having the copper sacrificial layer 12 as illustrated in FIG. 5(a).

But in applicants' claim it is the photoresist layer that is transferable, not the PDMS layer as the Examiner mistakenly argues. There is nothing in this section or anywhere else in

Lille's specification that describes any structure for applying photoresist to a surface of a workpiece and certainly not such a structure with "a transfer layer of polydimethylsiloxane with a transferable coating of photoresist on an outer surface of the transfer layer, the transferable coating of photoresist being transferable to the workpiece through physical contact ..." as claimed.

It is respectfully submitted that the Examiner has misinterpreted Lille's teaching for making and using a topography molding film. (See Lille's claim 1 for example.) Thus, Lille's transfer film is used to duplicate physical topography by using it as a mold and is not used for applying photoresist to a workpiece. The formation of Lille's replica (transfer film 14) is described as follows:

> A layer of a material, for example, elastomeric polydimethylsiloxane, also known as PDMS (SYLGARD 184, Dow Corning) is formed on the master (for example, by a spin-on process) and conforms to the surface that includes the inverse image of the membrane structure. The PDMS is cured (for example, at 60.degree. C. for 1 hour) to cross link the polymer and removed from the master wafer. The PDMS may shrink during the curing step. The removal may be carried out, for example, by peeling the PDMS from the master. A replica (transfer film 14) of the master silicon surface is thus formed. FIG. 3 shows a side view of a master 13 including an inverse image 18, and the transfer film 14 of the PDMS material. col. 4, line 59, through col. 5, line 4.

Thus, Lille's "replica (transfer film 14)" is a replica of the topography of the master silicon surface as shown in his Fig. 3. There is no teaching in Lille that the replica transfer layer 14 ever has a transferable layer of photoresist on it or that it is usable for applying photoresist. It is significant to note that photoresist is absent in Lille's Figs. 3 & 4. It is irrelevant that photoresist may have been used to form the topography of the master silicon surface prior to making the replica film.

Lille's resin-polymer is not photoresist.

It is respectfully submitted that the Examiner has erroneously argued that Lille's resin-polymer layer 16 is "representative" of applicants' transferable photoresist layer. Lille expressly states that the "resin-polymer film 16 is a precursor material that upon processing will form a glassy carbon material" (Lille col. 5, lines 13-15) which teaches away from using photoresist. Moreover, Lille never states that the resin-polymer material has photo-sensitivity. The Examiner cited to Lille's Fig. 4 which shows the PDMS replica (mold) 14 of the topography of wafer after it has been peeled off of the wafer and a resin-polymer 16 has filled in the indentation. The Examiner has not cited any support for the asserted equivalence of Lille's resin-polymer 16 and applicants' photoresist and applicants respectfully submit that that no support exists.

Lille mentions an embodiment in which a transfer film is formed across the substrate, and a patterned photoresist layer is formed on top of the transfer film. The method includes transferring the image of patterned photoresist layer through the transfer film, and removing the patterned photoresist layer. Transferring an image of a patterned photoresist is not the same as transferring the photoresist itself. In the specification Lille describes this alternative embodiment with reference to Fig. 6. A photoresist layer is patterned on top of the MSSQ and the pattern is transferred through the MSSQ using a fluorine-containing plasma. The photoresist layer is removed, leaving a structure on the wafer having a cross-section that is similar to that shown in FIG. 6. Col. 6, lines 52-57.

Thus, it is clear that Lille's photoresist layer on the MSSQ is not transferable to a workpiece. Lille teaches developing the photoresist while it is on the MSSQ and then removing it. Lille's structure is not equivalent to applicants' claimed structure and cannot be used in the way that applicants' structure can be used, i.e. for applying photoresist to a surface of a workpiece.

The Examiner noted that Lille's teaching does not include applicants' claimed "cushion layer consisting of rubber under the transfer layer, the cushion layer providing flexible support for the transfer layer." Dependent claim 3 adds that the cushion layer is silicone rubber. Lille's article is simply a wafer that is being processed using photoresist

applied by undescribed methods. It follows that adding a cushion layer of rubber to Lille's wafer would serve no useful purpose and, therefore, there is no motivation to add it.

For a cushion layer, the Examiner cites Davis, et al. 6821626 "Fluorocarbon random copolymer for use in toner release layer." Davis has only one figure which shows a cross-section of cylindrical roller:

> FIG. 1 shows a cross sectional view of a fuser member 10 which includes fuser roller, pressure roller, oiler donor roller, oiler metering roller, preconditioning roller, etc.. The core 16 is usually metallic such as stainless steel, steel, aluminum, etc.; however, the core 16 may also be made of a ceramic or plastic. The primary requisites for core 16 materials are that it provide the necessary stiffness, be able to support the force placed upon it, and be able to withstand whatever temperature to which it is subjected. Disposed above the core 16 lies one or more optional base cushion layers 14. col. 5, lines 14-23.

Davis is clearly non-analogous art for applicants' claim, as well as, in relation to Lille which deals with a "Method of forming microsuspension assemblies for direct access storage devices." Therefore, applicants submit that there is no motivation for one of ordinary skill in the art to look to either Lille or Davis for a solution to the problem of applying photoresist to a workpiece that is addressed by applicants' invention. Davis' cushion layer is not used as part of structure for transferring a photoresist to a workpiece and is, therefore, inapplicable. But even if one attempts to combine Lille or Davis, the applicants' structure will not be obtained because neither teaches a structure with a transferable photoresist.

It is respectfully submitted that given all of the cited references, one of ordinary skill in the art in the art of applying photoresist to workpieces would not be led to assemble applicants' claimed structure of a transfer layer of polydimethylsiloxane with a transferable coating of photoresist and a cushion layer consisting of rubber under the transfer layer.

Issue B:

The Examiner also rejected claims 11 and 14-16 under section 103(a) as being unpatentable over Lille, 6,725,526 in view of Davis, et al. 6,821,626 further in view of Drake 6,200,882. Applicants respectfully disagree. Claims 11 and 14 depend from claim 1 and add thickness limitations to selected layers. Drake teaches a "Method for processing a plurality of micro-machined mirror assemblies" and is again non-analogous art in relation to Lille, Davis and the applicants' claims because Drake does not teach a structure for transferring a photoresist to a workpiece. Drake is describing a method for processing a plurality of mirror assemblies formed from a silicon wafer:

> Planar base 301 has a first or substrate layer 311 which serves as the rigid support for the laminar structure of mirror assembly 200. Substrate 311, as shown most clearly in FIG. 7, has the shape of a parallelepiped. Substrate 311 has a length and width which define the length and width of mirror assembly 200 and has a thickness ranging from 75 to 600 microns and preferably approximately 175 microns. The relatively thick substrate has opposite top and bottom planar surfaces 312 and 313 and can be formed from any suitable material such as silicon, quartz and other relatively high-temperature glasses. In a preferred embodiment, substrate 311 is formed from N-type silicon in wafer form. Drake col. 9, lines 17-28.

The Examiner relies on Drake for a teaching of the thickness of the stiffener and transfer layers. But applicants respectfully submit that Drake does not teach stiffener and transfer layers as applicants' claim and, therefore, any teachings in Drake that relate to thicknesses of non-analogous layers are inapplicable. There is no motivation to look to Drake for thicknesses of layers as applicants claim. Applicants claims contain various numerical limitations for which the Examiner cites Drake, but these citations fail because the numerical limitations are for non-analogous elements.

Independent claims 15 and 16 each includes a cover-tape element. The Examiner's argument against these claims appears to omit any reference to the cover-tape element; and the rejection, therefore, fails to make a prima facie case of obviousness against these. It is respectfully submitted that none of the cited references has any teaching of a cover-tape element as claimed, so regardless of how the references are combined the applicants' claims that include a cover-tape element cannot result.

Independent claim 15 is directed to an embodiment that includes a cover-tape attached to the cushion layer. The cover-tape is larger in area than the cushion layer and extending beyond at least first and second edges of the cushion layer. Claim 16 is directed to an embodiment that includes a stiffener layer attached to the cushion layer, and a cover-tape attached to the stiffener layer.

Issue C:

??

The Examiner rejected claims 17-23 under section 103(a) as being unpatentable over Otsuka, et al. 2003/0197978 further in view of Bietsch 2005/0191582. Applicants' independent claim 17 is for a "structure for applying photoresist to a surface of a workpiece" that includes a cover-tape, at least two photoresist transfer pads attached to the cover-tape. Because Otsuka's teaching is not related to applicants' claimed structure is respectfully submitted that the Examiner has equated non-analogous elements in Otsuka to applicants' claimed elements. First, the Examiner erroneously equated the claimed cover-tape to a carbon film on a wafer. It is respectfully submitted that the term "cover-tape" as used in applicants' specification and claims and as understood by one of ordinary skill in the art cannot be read on a carbon film on a wafer. Applicants' specification makes it clear that the term "cover-tape" is being used in a standard manner:

> The loaded resist transfer pads 38 are held by a cover-tape 37 which is fed from reel 42. The loaded resist transfer pad 38 is pressed against the slider surface by roller 43 as the

> pallet moves on the conveyor 49. A section of cover-tape 37 is cut by prior art (not shown) and adheres to and moves with the pallet as it clears the roller 43. The pallet 41 with a section of cover-tape 37 and the loaded resist transfer pad 38 continues forward with the slider 20 and pallet 41. (p. 5, lines 19-23).

Otsuka's does not mention any structure for applying photoresist, and certainly does not teach the structure claimed by applicants in claim 17.

The Examiner admitted that Otsuka does not teach the polymer layer with a transferable coating of photoresist nor a cushion layer as included in claim 17. The Examiner then cited Bietsch for PDMS or silicone rubber in resist compositions. Bietsch describes a mechanically releasable slider process that utilizes silicone rubber or PDMS to take the function of a planarization material for individual sliders or slider rows. Bietsch's invention uses PDMS as planarization and bonding material of individual sliders or slider rows. (see paragraph 0023). Applicants respectfully disagree that Bietsch adds the elements that the Examiner admitted are missing from Otsuka. Neither Otsuka nor Bietsch teach the claimed cover-tape with at least two photoresist transfer pads attached to the cover-tape.

In dependent claim 22 the cover-tape and photoresist pads are formed into a roll. Dependent claim 23 recites that the photoresist pads are sequentially disposed on the cover-tape so that unrolling the roll sequentially exposes the photoresist pads. Dependent claims 22 and 23 make it even more clear that the cover-tape cannot be equated to a carbon film on a wafer. Among many differences, the carbon film on a wafer cannot be rolled up as claimed.

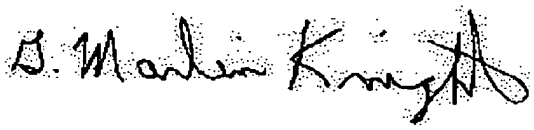
Dependent claim 20, which depends from claim 17, further distinguishes over the cited references by adding that the photoresist transfer pads further comprise a stiffener layer attached to the cushion layer, and that the polymer layer consists of polydimethylsiloxane and the cushion layer consists of silicone rubber.

Thus, none of the cited references have any comparable teaching to applicants' invention that includes a cover-tape with a plurality of photoresist transfer pads as claimed. Applicants respectfully submit that the references singly and even if combined fail to teach claimed elements of applicants' claims.

Conclusion

Applicants respectfully submit that the foregoing arguments have shown that the references cited in support of the rejections do not, in fact, teach or render obvious applicants' claimed invention even if combined as the Examiner suggests. Applicants further submit that the motivation to combine the selected features of the references is not present. The applicants, therefore, respectfully request that the rejections be reversed and that the claims be allowed.

Respectfully Submitted,



G. Marlin Knight (#33,409)
PO Box 1320
Pioneer, CA 95666
209-295-1982

8. Appendix of Claims in the Appeal:

1. A structure for applying photoresist to a surface of a workpiece comprising:

a transfer layer of polydimethylsiloxane with a transferable coating of photoresist on an outer surface of the transfer layer, the transferable coating of photoresist being transferable to the workpiece through physical contact; and

a cushion layer consisting of rubber under the transfer layer, the cushion layer providing flexible support for the transfer layer.

2. The structure of claim 1 further comprising a stiffener layer under the cushion layer.

3. The structure of claim 1 wherein the cushion layer consists of silicone rubber.

11. The structure of claim 1 wherein the transfer layer is approximately from 10 to 100 microns thick.

12. The structure of claim 1 wherein the cushion layer is approximately from 0.5 to 3.0 mm thick.

14. The structure of claim 2 wherein the stiffener layer is approximately 0.1 to 1.0 mm thick.

15. A structure for applying photoresist to a surface of a workpiece comprising :

a transfer layer of polydimethylsiloxane with a transferable coating of photoresist on an outer surface of the transfer layer;

a cushion layer consisting of rubber under the transfer layer, the cushion layer providing flexible support for the transfer layer; and

a cover-tape attached to the cushion layer opposite to the layer of photoresist, the cover-tape being larger in area than the cushion layer and extending beyond at least first and second edges of the cushion layer.

16. A structure for applying photoresist to a surface of a workpiece comprising :

a transfer layer of polydimethylsiloxane with a transferable coating of photoresist on an outer surface of the transfer layer;

a cushion layer consisting of rubber under the transfer layer, the cushion layer providing flexible support for the transfer layer; and

a stiffener layer attached to the cushion layer, and a cover-tape attached to the stiffener layer opposite to the layer of photoresist.

17. A structure for applying photoresist to a surface of a workpiece comprising:

a cover-tape; and

at least two photoresist transfer pads attached to the cover-tape, the photoresist transfer pads comprising a polymer layer with a transferable coating of photoresist on an outer surface of the polymer layer, and a cushion layer under the polymer layer opposite the transferable coating of photoresist.

18. The structure of claim 17 wherein the polymer layer consists of polydimethylsiloxane.

19. The structure of claim 17 wherein the photoresist transfer pads further comprise a stiffener layer attached to the cushion layer.

20. The structure of claim 17 wherein the photoresist transfer pads further comprise a stiffener layer attached to the cushion layer, the polymer layer consists of polydimethylsiloxane and the cushion layer consists of silicone rubber.

21. The pad of claim 17 wherein the cushion layer consists of silicone rubber.

22. The structure of claim 17 wherein the cover-tape and photoresist pads are formed into a roll.

23. The structure of claim 22 wherein the photoresist pads are sequentially disposed on the cover-tape so that unrolling the roll sequentially exposes the photoresist pads.

9. Evidence Appendix: None

10. Related Proceedings Appendix: None